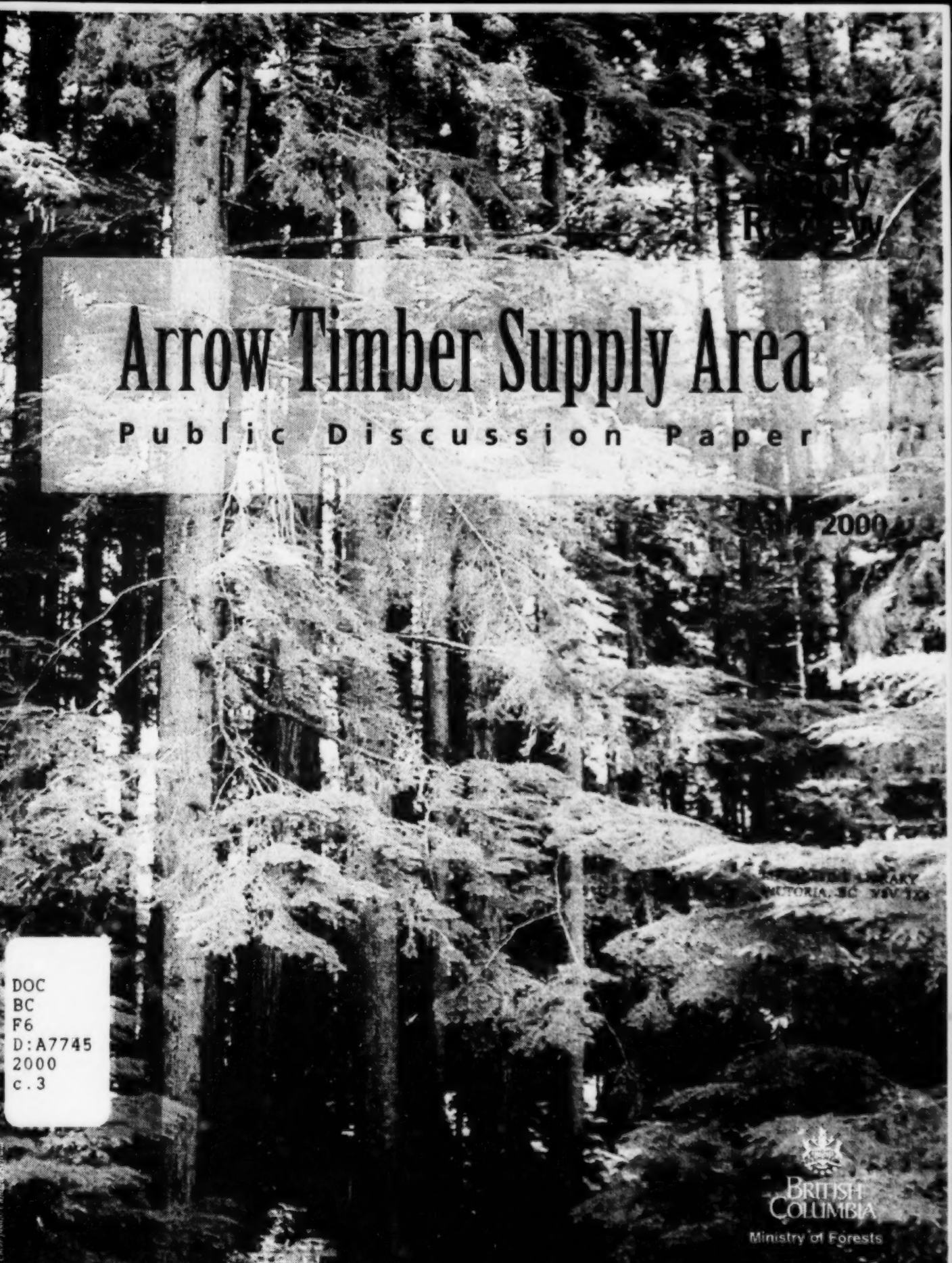

Arrow Timber Supply Area

Public Discussion Paper

2000

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British Columbia
Ministry of Forests

Introduction

The British Columbia Forest Service is reviewing the timber supply for all timber supply areas (TSAs) and tree farm licences (TFLs) in the province. This review examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province. Based on this review, the chief forester may, if necessary, adjust the allowable annual cut (AAC) for the Arrow TSA.

By law, the chief forester must review and set new AACs for all TSAs and TFLs every five years. The objectives of the Timber Supply Review are:

- to identify relevant current forest management practices and assess their effects on short- and long-term timber supply, and identify related economic, environmental and social factors
- to identify where improved information is required for future timber supply forecasts
- to provide the chief forester with information to make any necessary adjustments to the AACs for the next five years

Timber Supply Review in the Arrow TSA

The *Arrow TSA Data Package* and *Information Report* were released in January 1999. Following the release, the documents were reviewed by licensees, the public and government agencies. The BC Forest Service has now completed the *2000 Arrow TSA Analysis Report* that is summarized in this discussion paper. The objectives of the discussion paper are to provide British Columbians with an overview of the timber supply review and harvest level forecasts for the Arrow TSA and to encourage them to provide comments during the 60-day public review period. Public comments will be accepted until June 12, 2000.

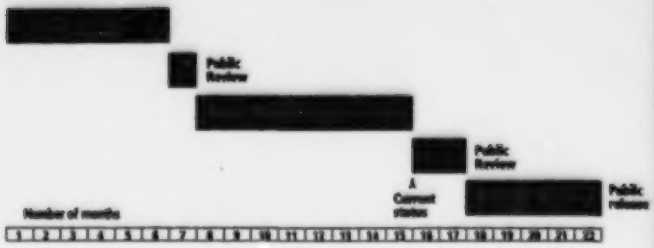
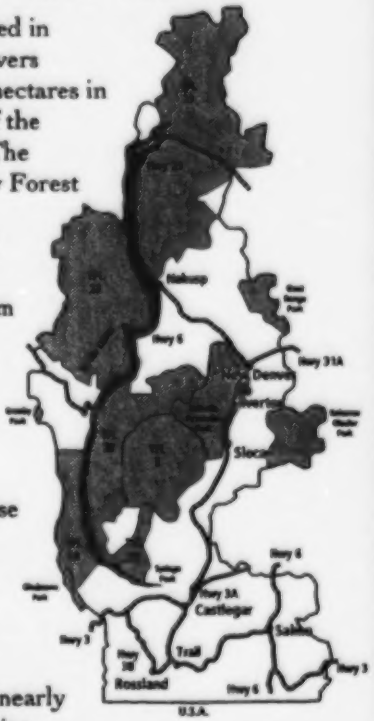


Figure 1
Review process for the Arrow TSA

Before setting a new AAC, the chief forester will review all relevant reports and public input. The chief forester's determination will be outlined in a *rationale statement* that, along with the *summary of public input*, will be publicly available upon release. Following the release of the AAC determination by the chief forester, the minister of forests will apportion the AAC to the various licences and programs.

Description of the TSA

The Arrow TSA is located in southeastern BC and covers approximately 741,000 hectares in the southwest portion of the Nelson Forest Region. The boundaries of the Arrow Forest District encompass the Arrow TSA, TFL 3 and most of TFL 23. The TSA is administered from the BC Forest Service office in Castlegar.



The total population of the TSA in 1996 was estimated to be 46,000 people, an increase of about eight per cent from 1991. The major communities are the cities of Castlegar, Trail and Rossland, with a combined population of nearly 18,000. Other communities include Fruitvale, Montrose, Warfield, Salmo, Slocan, Silverton, New Denver and Nakusp.

** A timber supply area is an integrated resource management unit established in accordance with section 7 of the Forest Act.*

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The natural resources

Numerous natural resources are associated with the forests in the Arrow TSA. These include timber, significant fish and wildlife habitat, and recreation and tourism amenities. The TSA also contains abundant water resources. Approximately 47 per cent of the area considered available for harvesting is located within watersheds licensed for domestic use.

Forests in the Arrow TSA have the distinction of being among the most productive and most diverse in the interior of the province. At lower elevations, Douglas-fir, lodgepole pine, western redcedar and western hemlock predominate and, at higher elevations, subalpine fir and Engelmann spruce. White pine, western larch, ponderosa pine, grand fir, aspen, black cottonwood and paper birch are also common. In this TSA, old-growth forests (older than 250 years) are relatively few, dispersed and more common at higher elevations. The timber harvesting land base–the area considered available for harvesting–comprises 27 per cent of the Arrow TSA.

The Arrow TSA supports an abundance and wide variety of wildlife species, including over 60 species of birds (resident and migratory) and all ungulate species present in BC, including Rocky Mountain bighorn sheep, white-tailed and mule deer, moose, mountain goats, elk and caribou. Old-growth forests, riparian areas and ungulate winter ranges are important forest management issues influencing wildlife habitat.

A wide variety of fish species are found in the area. The most notable is the trophy-sized Gerrard rainbow trout, unique to this region and of provincial significance. Sturgeon, which has been depleted almost to the endangered stage, is another important species. Other sport fish include Dolly Varden, kokanee, whitefish, bull trout, brook trout, burbot and walleye. Protection of fisheries values throughout the Arrow TSA is especially important due to the impact of the Columbia River dams.

Recreational use of the forests in the Arrow TSA is high due to the proximity of provincial and national parks and the exceptional natural scenery. The mountainous terrain, lakes and rivers provide a wide range of front- and back-country recreational opportunities including mountain-biking, hiking, fishing, camping, wildlife viewing, boating, heli-skiing, snow-mobiling and cross-country and downhill skiing.

Land use planning

In 1995, the provincial government released the Kootenay-Boundary Land Use Plan, which included the Arrow TSA and resulted in the creation of 16 new parks in the area. The new provincial parks within the Arrow TSA are Syringa Creek, Goat Range, Gladstone and Granby.

In July 1997, the government approved the Kootenay-Boundary Land-Use Plan - Implementation Strategy (KBLUP-IS). The strategy provides direction regarding landscape units, biodiversity emphasis objectives, caribou habitat, ungulate winter range, scenic corridors, community and domestic watersheds, and forest cover constraints. The strategy also provides an expression of the government's commitment to achieve the Crown's social and economic objectives for the region, including the Arrow TSA.

Current allowable annual cut

In September, 1995, the chief forester set the AAC for the Arrow TSA at 619,000 cubic metres, unchanged from the previous determination. This harvest level has been in place since 1983.

Socio-economic profile

Regional economy

As Figure 2 shows, the major employment sectors in the Arrow TSA are the public sector (education, health and government public service), forestry, other primary industry (mostly mining), and tourism. Based on the 1996 census, forestry and wood-related processing accounted for approximately 19 per cent of TSA employment. Tourism has demonstrated continued growth and investment in recent years.

The total experienced labour force in the Arrow TSA increased by 8.7 per cent from 1991 to 1996 (compared to a provincial growth rate of 14 per cent).

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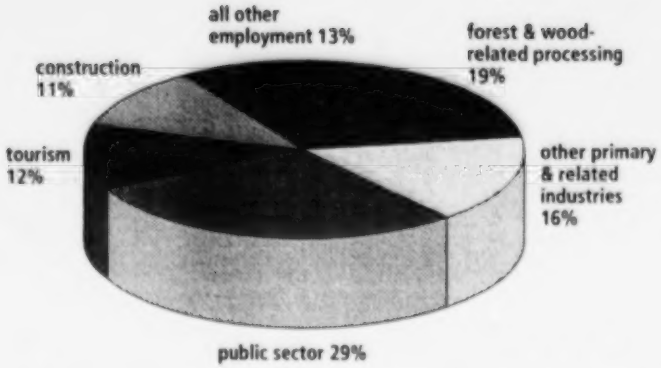


Figure 2. *Estimation of total employment by sector for the Arrow TSA, 1996*

Source: Ministry of Finance and Corporate Relations. The 1996 Forest District Tables. April, 1999.

Most of the timber harvested in the Arrow TSA (associated with the current AAC of 619,000 cubic metres) is processed by local milling facilities. Total annual milling capacity is approximately 2.2 million cubic metres. To meet this requirement, additional wood supply for the local mills is obtained from private lands, nearby TFLs and TSAs, and various other sources.

	TSA	Provincial
Direct employment (person years)	609	704
Total employment (person years)	950	1627
Total employment income ($1998 millions per year)	$39.7	$63.9
Provincial government revenues ($1998 millions per year)	n.a.	$27.2

Table 1. *Summary of local and provincial economic information associated with the current AAC.*

Table 1 illustrates the estimated contribution of the forest industry associated with the Arrow TSA timber harvest to both the regional and provincial economies. Figures in this table are based on the current AAC of 619,000 cubic metres.

Timber supply forecasts

A timber supply computer model is used to project several possible timber supply forecasts for the next 250 years. One of these forecasts is the base case forecast, which illustrates the effect of current forest management on timber supply. The base case is not an AAC recommendation, but rather one of many sources of information the chief forester will consider when setting the AAC.

The base case forecast is presented in this report for discussion and comparison and due to areas of uncertainty, the AAC determined by the chief forester may be greater or less than the level forecast in the base case.

In the 2000 Arrow TSA Analysis Report (see Figure 3) the base case harvest level starts at 609,300 cubic metres per year — the current AAC adjusted to account for the 9,700 cubic metres associated with issued woodlot licences. The harvest levels for woodlot licences are set locally by the district manager.

The base case timber supply forecast for the Arrow TSA indicates that the current AAC can be maintained for only one decade without creating future timber shortages. By about the third decade, the annual harvest level is projected to decline to 493,500 cubic metres, however, over the long term the harvest level is projected to increase to a long-term steady level of 557,000 cubic metres.

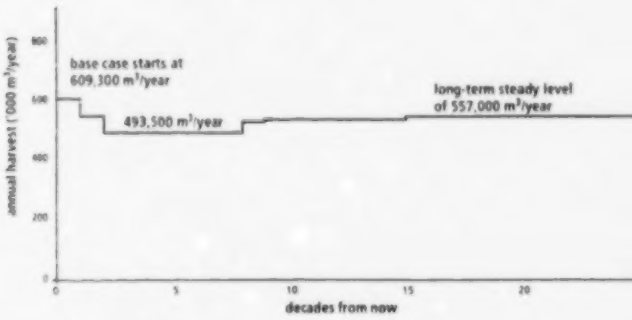
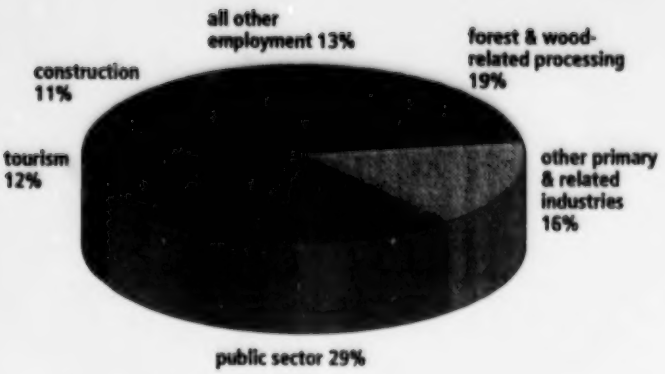

annual harvest ('000 m³/year)
base case starts at 609,300 m³/year
493,500 m³/year
long-term steady level of 557,000 m³/year
decades from now

Figure 3.
Base case harvest forecast for the Arrow TSA, 2000

The harvest level projections in the 2000 timber supply analysis show a different timber supply forecast than in the previous 1994 timber supply analysis. The long-term harvest level is approximately 25 per cent higher than previously projected. This is mainly due to changes in the volume estimates for managed regenerating stands.



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	TSA	Provincial
Direct employment		
(person years)	669	704
Total employment		
(person years)	950	1627
Total employment income		
($1998 millions per year)	339.7	$63.9
Provincial government revenues		
($1998 millions per year)	n.a.	$27.2

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The base case forecast is presented in this report for discussion and comparison and due to areas of uncertainty, the AAC determined by the chief forester may be greater or less than the level forecast in the base case.

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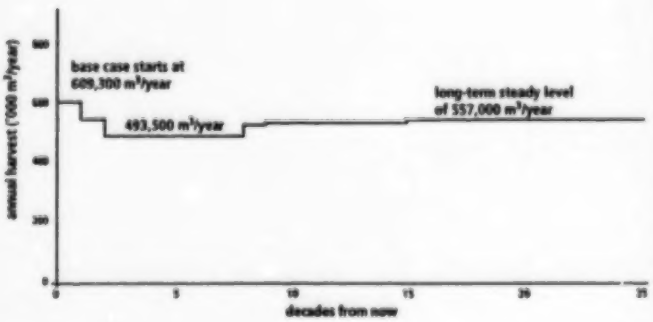
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493,500 m³/year
long-term steady level of 557,000 m³/year
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Base case harvest forecast for the Arrow TSA, 2000

The harvest level projections in the 2000 timber supply analysis show a different timber supply forecast than in the previous 1994 timber supply analysis. The long-term harvest level is approximately 25 per cent higher than previously projected. This is mainly due to changes in the volume estimates for managed regenerating stands.

Sensitivity analyses: examining uncertainty

Because forests are complex and constantly changing, timber supply analysts assess how their timber supply forecast results might be affected by uncertainties in the inventory information and management practices. These uncertainties are generally examined in sensitivity analyses, which the chief forester will consider in determining an AAC. The sensitivity analyses are useful for assessing how any changes in information or uncertainties and risks might affect timber supply.

A number of sensitivity analyses were conducted to examine the stability of the timber supply when considering the uncertainty of a number of factors. One important sensitivity analysis examined is the uncertainty about the contribution of the Slocan area, which is described below. For a complete listing, please refer to the *2000 Arrow TSA Analysis Report.*

Uncertainty about the timber supply contribution from the Slocan area

In the Slocan, an area that encompasses the main part of the Slocan Valley, has had limited harvesting activity since 1970s. This area represents about 14 per cent of the timber harvesting land base in the Arrow TSA.

In the base case forecast, the Slocan area contributes about 89,000 cubic metres per year to the harvest level in the first decade. However, there is some uncertainty about this level of timber supply contribution. A sensitivity analysis was undertaken to examine the risk to timber supply with lower levels of contributions from the Slocan area.

Figure 4 shows that if the contribution from the Slocan area is limited to 50,000 cubic metres per year, the initial harvest level declines by about 5 per cent to 581,280 cubic metres, and the long-term harvest level is decreased by about 16,000 cubic metres per year. If the Slocan area contribution is limited to 10,000 cubic metres per year, then the initial harvest level declines by 10 per cent to 548,370 cubic metres per year.

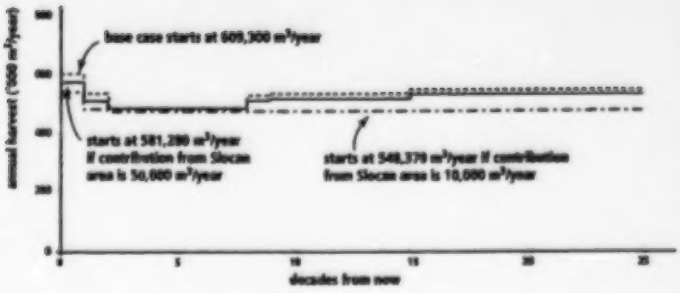
base case starts at 609,300 m³/year
starts at 581,280 m³/year
if contribution from Slocan
area is 50,000 m³/year
starts at 548,370 m³/year if contribution
from Slocan area is 10,000 m³/year
decades from now

Figure 4.
The uncertainty of the timber supply contribution from the Slocan area

In the *Forest Act,* the chief forester may specify that portions of the AAC are attributable to different species or certain areas within a timber supply area. Therefore, in addition to examining the contribution of the Slocan area to the timber supply for the Arrow TSA, the chief forester may consider the merits of specifying a partition as part of setting the AAC.

Implications of changes in the AAC

Environmental Implications

Current forest management follows the standards set out by the Forest Practices Code. These standards are designed to maintain a range of biodiversity and wildlife values. In addition, the Kootenay Boundary Land Use Plan - Implementation Strategy provides direction on a range of environmental considerations. In the Arrow analysis area, about 63 per cent of the total TSA is not considered available for timber harvesting and will provide for many environmental values. Forested area both in and outside of the timber harvesting land base will aid in the maintenance of critical forest habitats for many species. Forest cover requirements for deer, biodiversity, visual quality and community watersheds were included in the analysis.

First Nations Implications

Currently there are no First Nations reserves in the Arrow TSA. However, the Ktunaxa, Shuswap, Okanagan and Sinixt Nations have asserted traditional territories within the TSA. The Ktunaxa Kinbasket Tribal Council, on behalf of the Ktunaxa Nation, has submitted to the provincial government a comprehensive land claim covering the southeast corner of the province, including part of this TSA.

The Westbank First Nation, a member of the Okanagan Nation, has also entered into land claim negotiations for part of the TSA. The Shuswap Nation Tribal Council, though not participating in the provincial treaty process, has stated their interest in some form of negotiation regarding their traditional territory.

The impacts of any treaties on the Arrow TSA land base are unknown at this time. When treaties are finalized and the impacts are known, they will be considered in future AAC determinations.

An Archaeological Overview Assessment has been completed for the entire Arrow TSA and is the basis for determining areas and sites that may require further assessment. Archaeological Impact Assessments are carried out as part of development planning to adjust forestry practices so cultural heritage sites are protected. However, the accounting of these measures remains unquantified and therefore is not reflected in the analysis. Future timber supply analyses and AAC determinations will incorporate the management practices when more information is available.

Community Implications

The implication of changes in the AAC for local communities is an important consideration in the Timber Supply Review. The base case harvest forecast for the Arrow TSA suggests that a harvest level of 609,300 cubic metres per year (excluding 9,700 cubic metres for woodlots) could be maintained for one decade. Then over the following two decades, the harvest level is projected to decline by about 19 per cent to 493,500 cubic metres per year. If the harvest level declines, then employment and economic activities associated with timber harvesting could similarly decline.

In the coming years, new light industries may locate in the area. Consequently, employment associated with transportation, tourism and other service sectors may increase. Such development could promote diversification and stability for the local economy.

Your input is needed

Establishing the AAC is an important decision that requires well-informed and thoughtful public input. Feedback is welcomed on any aspect of this discussion paper, the *2000 Arrow TSA Analysis Report* and other issues related to the timber supply in the Arrow TSA. Forest Service staff would be pleased to answer questions or discuss concerns that would help you prepare your response. Please send your comments to the forest district manager at the address below. Your comments will be accepted until June 12, 2000.

You may identify yourself on the response if you wish. If you do, you are reminded that responses will be subject to the *Freedom of Information and Protection of Privacy Act* and may be made public. If the responses are made public, personal identifiers will be removed before the responses are released.

A summary of public comments will be attached to the AAC rationale and will be available from the district office when the chief forester's AAC determination is announced.

For more information contact and/or mail your comments to:

District Manager
B.C. Forest Service
Arrow Forest District
845 Columbia Ave.
Castlegar, B.C. V1N 1H3

Phone: (250) 365-8600, Fax: (250) 365-8568, or
Electronically mail to Peter.Lewis@gems9.gov.bc.ca
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Background Information Regarding TSR

Background Information Regarding TSR

The Chief Forester's Responsibility

Determining the allowable annual cuts (AACs) for public forest lands in British Columbia is the responsibility of the province's chief forester. In this lengthy and complex process, the chief forester considers technical reports, analyses and public input, as well as government's social and economic objectives.

This responsibility is required by legislation in the *Forest Act, Section 8.* It states that the chief forester shall specifically consider the following factors:

1. The rate of timber production that may be sustained from the area, taking into account:
   - the composition of the forest and its expected rate of growth
   - the time that it will take the forest to become re-established
   - silviculture treatments, including reforestation
   - standards of timber utilization
   - constraints on the amount of timber that may be produced due to use of the forest for other purposes.
2. The short- and long-term implications to the province of alternative rates of timber harvesting from the area.
3. The nature, production capabilities and timber requirements of established and proposed processing facilities.
4. The economic and social objectives of the Crown for the area, region and province—as expressed by the minister of forests.
5. Abnormal insect or disease infestations, and major salvage programs planned for the timber on the area.

Some of these factors can be measured and analyzed—others cannot. Ultimately, the chief forester's determination is an independent professional judgment based on the best available information. By law, the chief forester is independent of the political process, and is not directed by the minister of forests when determining AACs. In these determinations, the chief forester considers relevant information from all sources.

Why the current AAC may be higher than the long-term harvest level.

Some concern has been expressed that the AACs are higher than the long-term harvest level. There are two main factors which explain this difference:

- In the short term, harvesting takes place in older forests which have accumulated high timber volumes by growing for a long time. Future harvesting on the same sites will take place in second-growth forests at younger ages, yielding lower volumes per hectare.
- Where the long-term harvest level is significantly below the current AAC, the chief forester's strategy is to gradually reduce AACs in a managed transition to the lower level over several decades—provided the long-term harvest level is not jeopardized. This allows communities that rely on the forest sector to avoid sudden economic disruptions and to plan for the future.

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